

BD 139 also need heatsinks. These do not need to be large.



BC559 - without heatsinks



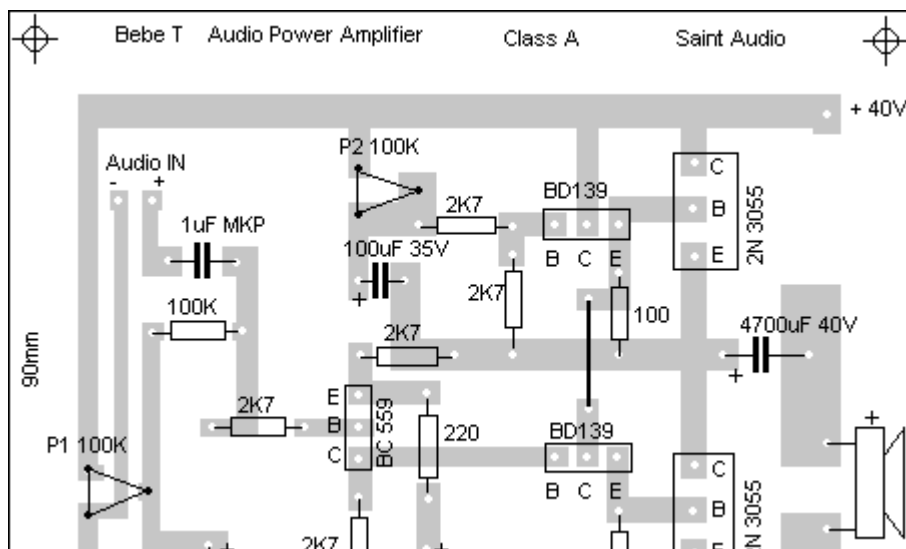
About HEATSINKS

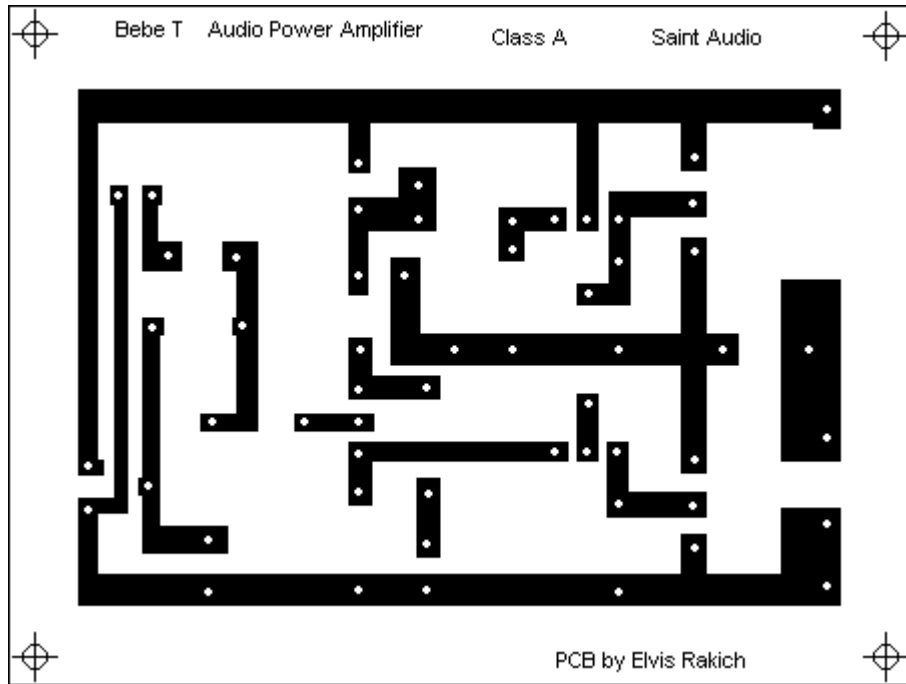
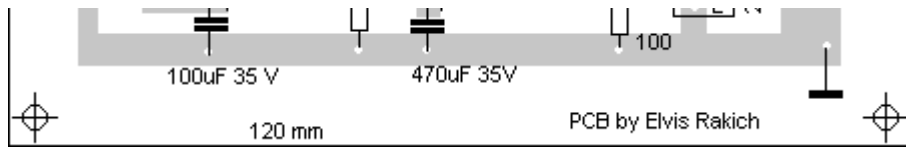
Important !!

Before applying power, set P1 to the middle of its travel, and P2 to maximum resistance (minimum current).

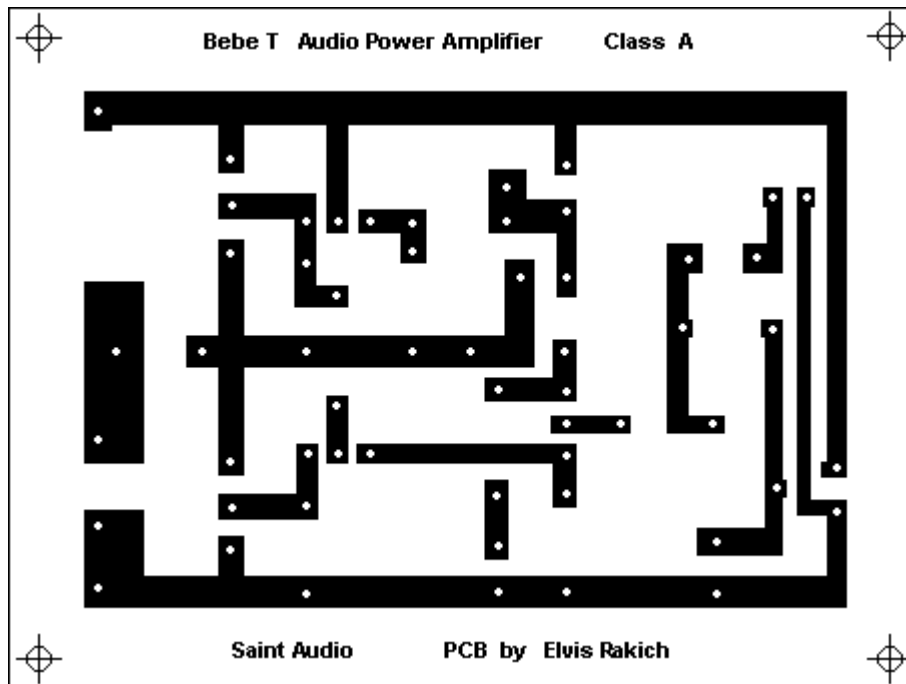
Be very careful - if you accidentally set P2 to minimum resistance the amp will probably self destruct itself - more or less immediately.

PCB:





PCB - Mirror



Measured Performance:

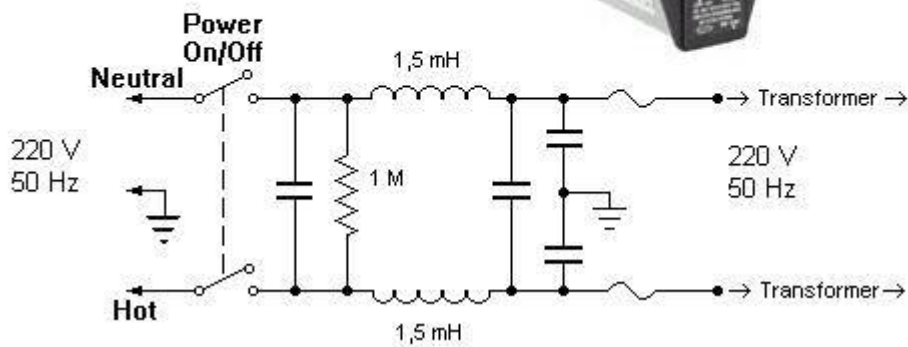
Supply Voltage	40V
Quiescent Current	1.7A
Maximum power 8 Ohms	20W (15W)
Output Noise (unweighted)	<1 mV
Distortion @ 1kHz, 15W	< 0.2%
Output Impedance	0.378 Ohm
Frequency Response (-0.5dB @ 1W)	<10Hz to>50kHz

Other acceptable Supply Voltage & Current combinations:

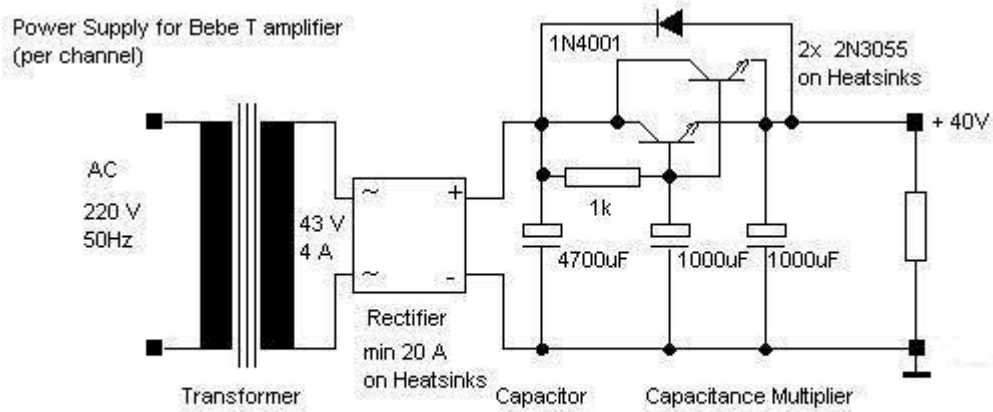
Z (ohms)	Volts	Iq (Amps)	Diss. (W)	Power
8	40	1.70	68.00	19.81
8	35	1.50	52.50	15.02
4	30	2.50	75.00	18.01
8	30	1.30	39.00	10.89

POWER SUPPLY

AC FILTER



(AC filter is not necessarily)



I recommend Capacitance Multiplier Power Supply For Class-A Amplifiers. Amp sounds better.

***** [Capacitance Multiplier - Design Considerations](#) (by Rod Elliott)

The only real thing to worry about is the degree of filtering needed! We must assume that at least 3 Volts will be lost across the capacitance-multiplier filter, to ensure that the DC input (including ripple component) always exceeds the output voltage.

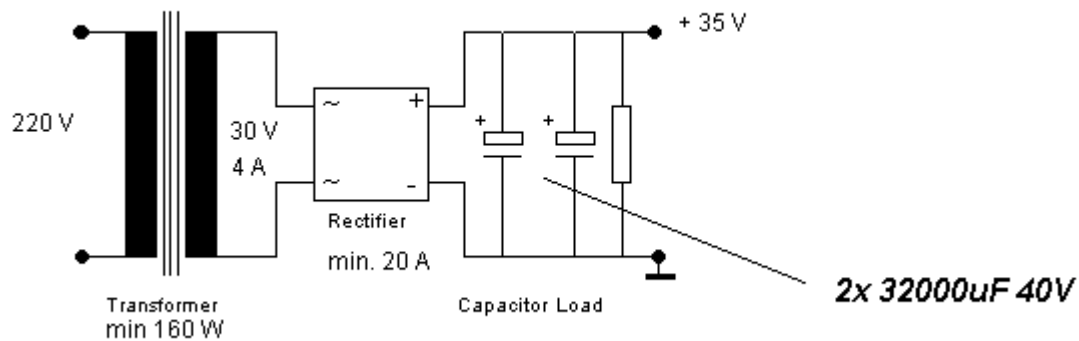
Because there is no regulation, the power amplifier must be capable of accepting the voltage variations from the mains - every standard power amplifier in existence does this quite happily now, so it is obviously not a problem. Note that the output power is affected, but this happens with all amps, and cannot be avoided without a regulator.

Figure 2 shows the basic configuration of a capacitance-multiplier filter, where the capacitance appearing at the base of the output device is effectively multiplied by the gain of the device - thus a 1000uF capacitor appears (electrically) to be a 1 Farad (yes, 1,000,000uF) cap, assuming a gain of 1000 in the output device.

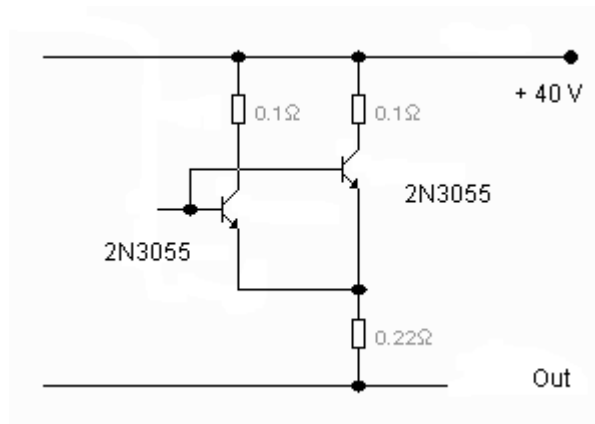
One could simply use a pair of 1F caps for a dual supply, but I have noticed a dearth of such devices (other than the 5V "Supercaps" used for memory backup in computers). Since they will need to be rated at about 35V, and be capable of considerable ripple current, I cannot help but feel that this is not a viable option.

Both methods will provide a ripple of well under less than 5mV RMS, but the multiplier has the advantage of removing the triangular waveform - it is not a sine wave, but has a much lower harmonic content than would be the case with a 1F capacitor.

Simple Power supply: (acceptable)



If you want to decrease dissipation - use two output transistors in parallel:



My comment: **Sound is wonderful.**

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